

Amendment to the claims:

Claims 1-4 (cancelled).

- 1 5. (currently amended) ~~The circuit recited in claim 4~~ A circuit for determining
2 temperature of an active semiconductor device, comprising:
3 (A) a semiconductor substrate having thereon the active device;
4 (B) a bridge circuit comprising:
5 (i) a first thermal sensitive device disposed in thermal contact with an
6 electrode of the active device, such first thermal sensitive device having a pair of
7 terminals, a first one of the pair of terminals being connected to a first node and a
8 second one of the pair of terminals being connected to a second node;
9 (ii) a second thermal sensitive device disposed in thermal contact with the
10 electrode of the active device, such second thermal sensitive device having a pair
11 of terminals, a first one of the pair of terminals being connected to a third node
12 and a second one of the pair of terminals being connected to a fourth node;
13 (iii) a third thermal sensitive device disposed in thermal contact with the
14 substrate, such third thermal sensitive device having a pair of terminals, a first one
15 of the pair of terminals being connected to the second node and a second one of
16 the pair of terminals being connected to the fourth node;
17 (iv) a fourth thermal sensitive device disposed in thermal contact with the
18 substrate, such fourth thermal sensitive device having a pair of terminals, a first
19 one of the pair of terminals being connected to the first node and a second one of
20 the pair of terminals being connected to the third node;
21 (v) a voltage potential connected between the first node and the fourth
22 node;
23 (vi) an output provided by the second node and the third node;
24 including a tuning circuit coupled to an output electrode of the transistor, such tuning
25 circuit having a tunable element controlled by a control signal fed to such tunable
26 element.

1 6. (original) The circuit recited in claim 5 including a processor responsive to a voltage
2 produced at the output of the bridge and a signal representative of power fed to the
3 transistor.

1 Claims 7-10 (cancelled).

1 11. (currently amended) ~~The circuit recited in claim 10.~~ A circuit for determining
2 temperature of an active semiconductor device, comprising:
3 (A) a semiconductor substrate having thereon the active device;
4 (B) a Wheatstone bridge circuit having in each of four branches thereof a thermal
5 sensitive device, one pair of such thermal sensitive devices being in thermal
6 contact with an electrode of the active device;
7 wherein the thermal sensitive devices are resistors;
8 wherein the active device is a transistor; and
9 -including a tuning circuit coupled to an output of the transistor, such tuning
10 circuit having a tunable element controlled by a control signal fed to such tunable
11 element.

1 12. (original) The circuit recited in claim 11 including a processor responsive to a voltage
2 produced at an output of the Wheatstone bridge circuit and a signal representative of
3 power fed to the transistor.

1 13. (original) The circuit recited in claim 12 wherein the output provided by the
2 Wheatstone bridge provides a measure of a temperature difference between the
3 temperature of the transistor and ambient temperature.

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1 14. (currently amended) The circuit recited in claim 13 wherein the processor produces
2 the control signal to maximize power fed to the transistor and minimize power
3 dissipated by such transistor.

1 Claims 15 – 17 (cancelled).

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1 18. (currently amended) ~~The circuit recited in claim 17A~~ circuit for determining
2 temperature of an active semiconductor device, comprising:

3 (A) a semiconductor substrate having thereon the active device;
4 (B) a Wheatstone bridge circuit having in each of four branches thereof a thermal
5 sensitive device, one pair of such thermal sensitive devices being in thermal
6 contact with an electrode of the active device;
7 wherein another pair of such thermal sensitive devices is in thermal contact with
8 the substrate;
9 wherein the thermal sensitive devices are resistors;
10 wherein the active device is a transistor; and
11 including a tuning circuit coupled to an output of the transistor, such tuning
12 circuit having a tunable element controlled by a control signal fed to such tunable
13 element.

1 19. (original) The circuit recited in claim 18 including a processor responsive to a
2 voltage produced at an output of the Wheatstone bridge circuit and a signal
3 representative of power fed to the transistor.

1 20. (original) The circuit recited in claim 19 wherein the output provided by the
2 Wheatstone bridge provides a measure of a temperature difference between the
3 temperature of the transistor and ambient temperature.

- 1 21. (original) The circuit recited in claim 20 wherein the processor produces the control signal to
- 2 maximize power fed to the transistor and minimize power dissipated by such transistor.